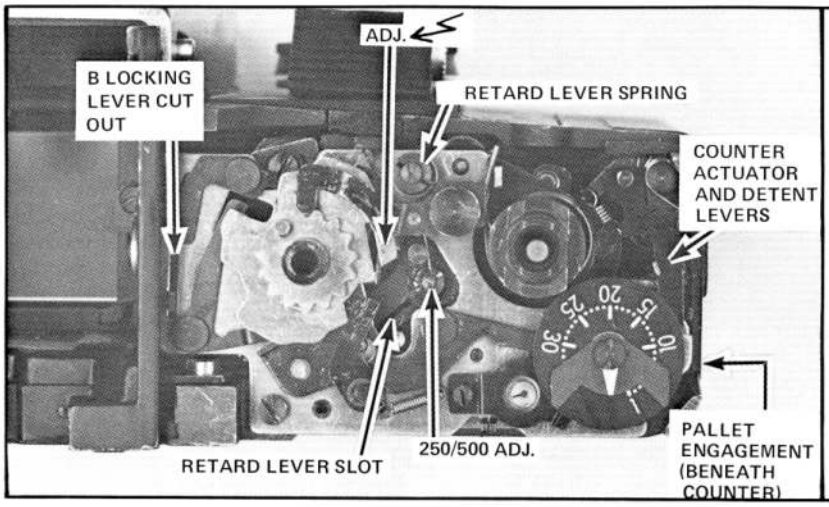


Due to their relatively low price, the Exakta RTL 1000 and its relatives the Praktica LTL and LLC are becoming popular cameras with cost-conscious amateur photographers. These cameras are all constructed around Exakta/Praktica's answer to the Copal Square shutter. Although this article deals specifically with the Exakta RTL 1000, most of the information about the shutter and its adjustment is applicable to any East German camera using a vertical running metal focal-plane shutter.

EXAKTA RTL

Disassembly

Begin disassembly by unscrewing the rewind knob. Beneath the rewind knob assembly, you'll find a plate holding the ASA setting dial down. Do not remove the plate. It's held on by screws from the other side, so that by forcing this plate all you'll do is damage.

With the rewind knob off, remove the two screws holding the rewind side of the cover and lift it off. Notice in the camera body there's a wiper that touches the hot lead on the PC terminal. The plastic holding this lead is of low quality. Be careful, the plastic is easy to break.

To remove the wind side top plate, it is first necessary to remove the insert in the wind lever cap. This insert frequently carries film reminder information. The insert is glued in place, and acetone used as a solvent will help. Also at this time, remove the shutter speed index from the top of the shutter speed setting dial. This index is also glued on and may be difficult to remove. Solvent may be used to make it easier to remove.

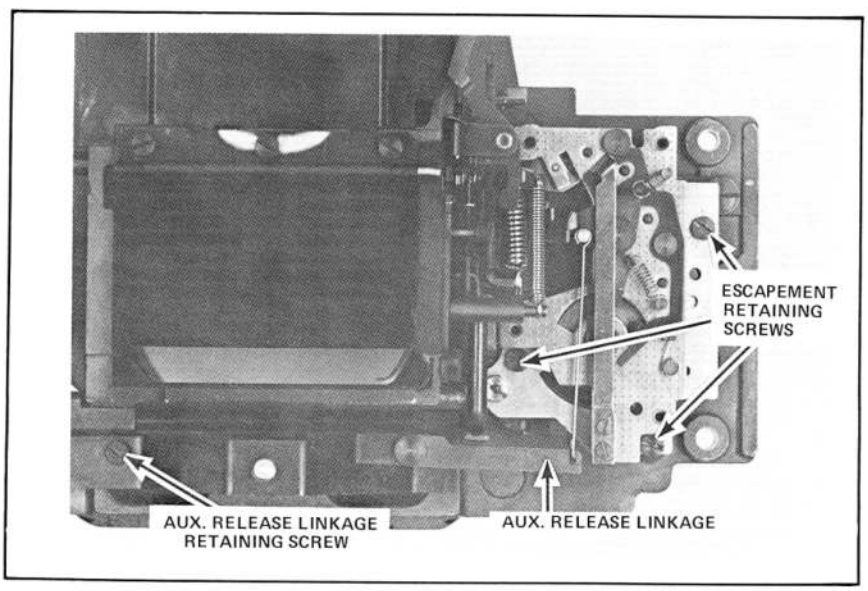
Inside the wind lever cap, remove the E-ring and lift off the washer. Now you can unscrew the slotted collar within the wind lever cap and lift off the wind lever.

In the center of the shutter speed setting dial there is a screw. Remove this screw and lift off the dial. At this point, there are two screws holding the top cover on. Remove the two screws and lift off the wind side top cover. Replace the speed setting dial at this point to lock the speed cams in place.

A frequent cause of camera malfunction is a bent wind driver. The wind driver is frequently bent by the camera operator's winding the camera too vigorously. The wind driver in many cases may be re-formed. A severly bent driver will have to be replaced.

The bottom cover is removed by taking out its four screws. It pays to lift the rewind button out at this point to prevent its loss.

The front standard may be removed without removing the release lever, delayed action setting lever, chrome front plate or bayonet mount. To remove the front cover, first peel off the front leatherette. This will expose two sheet aluminum cover plates. These cover plates conceal the fastening screws for the front standard. Peel the plates off but save them for reuse as the machining

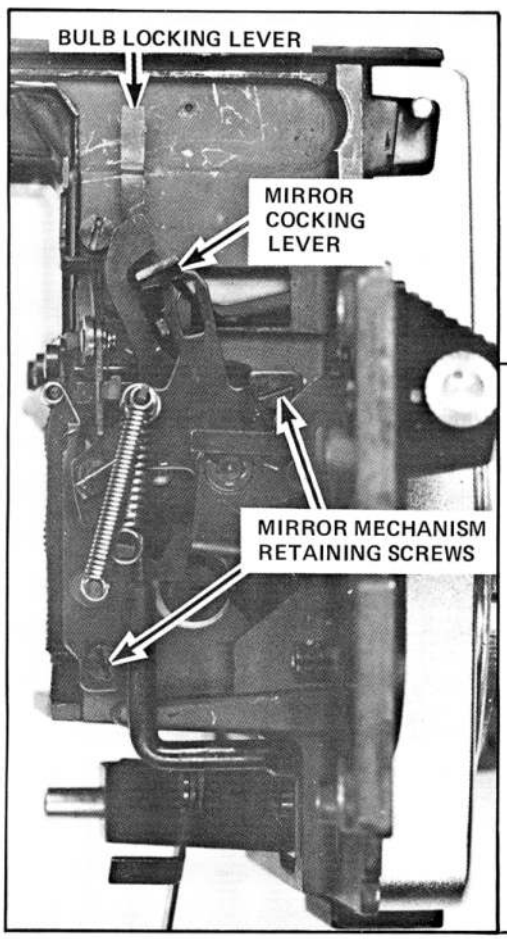


of the front standard is sloppy and the covers will be needed to make the leatherette fit properly.

To remove the front standard and mirror cage, first remove the speed governor. To do this, first lift both the *counter actuator* and *counter detent levers* at the extreme wind side end of the camera away from the counter dial. This will let the initial tension off the counter dial spring. Then, remove the screw in the center of the counter dial, lift off the counter index plate and gently lift up on the counter dial. Be sure to free the end of the counter dial spring which is attached to the speed governor, to avoid damage to the counter return spring.

1000

by Chris Dowden



The governor assembly is held on by three screws. Two of these are toward the back of the camera—one in the corner near the back hinge and the other close to the prism mount. The third is in front of the plate. Removing these three screws allows the entire governor assembly to be lifted from the camera body.

Now, remove the four screws holding the front standard and mirror cage in place. The front standard will not come out easily because it is glued in place. Usually, cutting the glue around the outlines of the front standard will be all that is necessary to free the standard and mirror cage from the camera body.

At this point, it is easy to clean the governor. Be sure to oil all the governor pivots before reinstalling the governor. Both the long-exposure/delayed-action escapement and the mirror cage actuating mechanism can be flush cleaned.

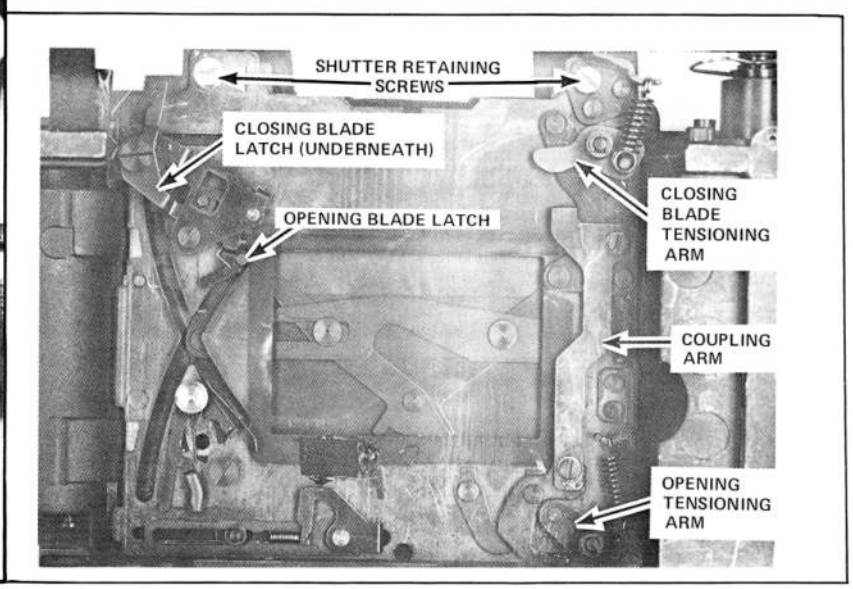
If you wish to remove the long-exposure/delayed-action escapement, you must first remove the *calibration plate* from the front. This plate typically carries the markings 2, 4, 8 for the length of exposure delivered with the camera set to deliver long exposures. The calibration plate is glued in place. Depressing the actuator button of the self-timer in the center of the setting knob will allow you to reach underneath and spring the plate free.

Underneath you'll find the retaining collar which you can use your Multi-span wrench to remove. Lift off the *setting ring, setting lever,* and the *escapement release button* assembly. Now on the back of the front standard locate the three screws holding the escapement in place. Remove these screws and gently lift the escapement free. Be sure to unhook the wire link from the *auxiliary release linkage.*

If at all possible, avoid disassembly of the mirror cage operating mechanism. The mechanism may be flush cleaned. Be sure to use shutter oil on the mirror cage lever's bearings. Grease should be used on the mirror cage latches. It's very easy to have a rough releasing camera if the mirror cage releasing latch has not been lubricated. The mirror cage actuator mechanism is modular and may be removed if necessary. Be sure to remove the auxiliary release linkage and camera release button first.

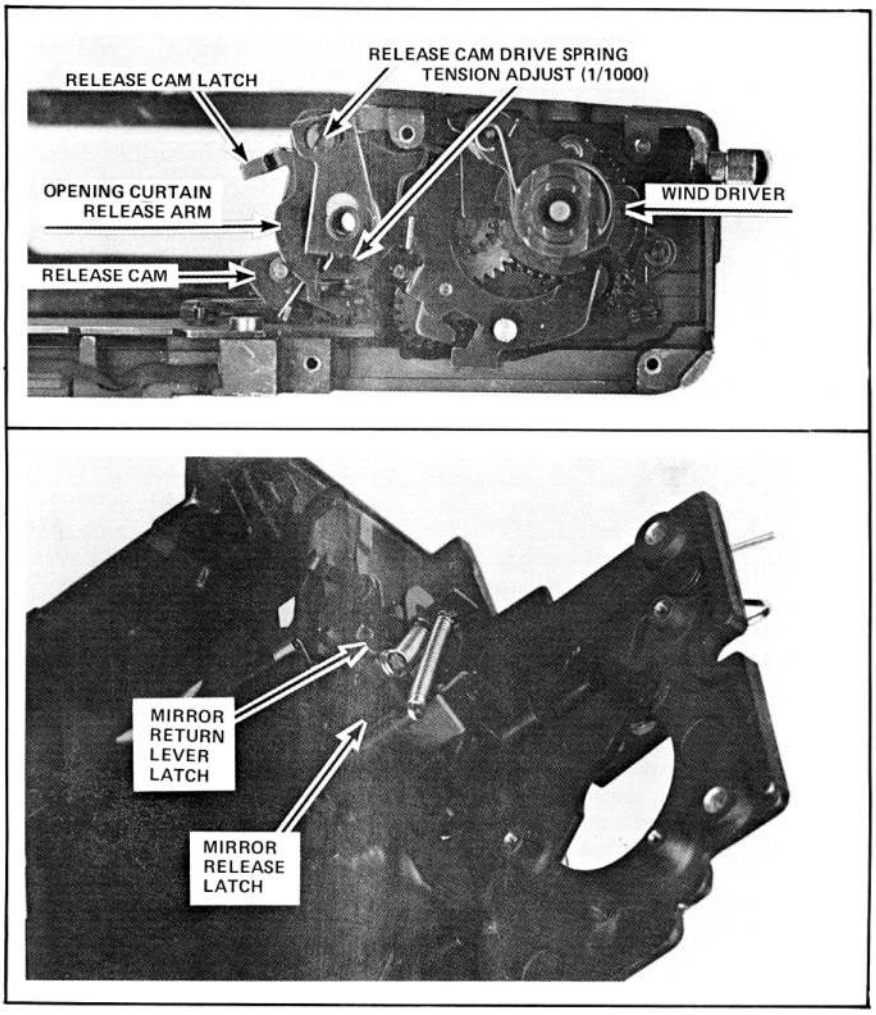
Should you wish to remove the shutter assembly from the camera body, this is easy once the front standard has been removed. First, cock the body and the shutter. The shutter is held in place by two screws at the top of the camera body. One of these screws appears as though it might be used to hold a spring fastening lever in place. This is not the case. Remove both screws retaining the shutter. Also, disconnect the *shutter cocking tape* from the *shutter cocking arm.*

Now, the shutter assembly may be gently worked from the camera body. It may be necessary to do a fair amount of wiggling, but no force will be necessary in removing the shutter. On the right-hand side of the shutter assembly is the cocking linkage. At the top of the shutter assembly is the *closing blade tensioning arm.* At the bottom of the shutter is the *opening blade tensioning arm.* The coupling arm connecting the



cocking arms may be adjusted if necessary. It will be necessary to adjust this linkage if there is a gap between the blades as they're being cocked, or if one of the blades does not travel far enough to be latched in the cocked position.

Loosen the two screws on the *coupling arm* between the opening and closing blade cocking arms and you can slide the coupling arm back and forth for adjustment. If the coupling arm is moved too far toward the top of the shutter, the opening curtain will not latch. If the coupling arm is moved too far down, neither curtain will latch in the cocked position.



RETARD LEVER		PALLET	ADJUST
	MINIMUM	NO	FLASH ADJ. ON CAM
B	ABOUT SAME AS 1/8 OR 1/15	NO	
1	FULL	YES	PALLET
2	LESS		ENGAGEMENT
4			
8			
15	LEAST		RETARD
30	FULL	NO	LEVER SLOT
60			
125	LEAST	NO	
250	INERTIA LEVER ONLY		250/500
500	INERTIA LEVER ONLY		adj.
1000	NO RETARD		RELEASE CAM DRIVE SPRING

The X-sync contact and flash safety switch are located in the lower left-hand corner of the shutter. If it's necessary to clean or adjust these contacts, be very careful as the plastic used as an insulating material is easily broken (as I learned). If care is taken to prevent the sync contact insulator from being damaged, the shutter assembly may be flush cleaned.

If the shutter blade assembly, speed governor, front standard, and mirror cage have all been removed, it may be necessary to reposition some parts slightly so the entire camera operates correctly once reassembled. In particular, if with the shutter and mirror cage in place the opening curtain will not latch, it's likely that the shutter will have to be shifted toward the rewind side of the camera slightly.

It's easiest to set a travel time and eliminate side-to-side variation without the mirror cage in place. Travel time on the camera used for preparing this information was between 7.5 and 8.5 milliseconds. If it is necessary to adjust travel time or make a correction in side-to-side, this is done by bending very slightly the hooking points for the blade drive springs. I find it convenient to temporarily reinstall the speed governor for setting up travel time as this allows me to select a slower shutter speed around 1/30 second so that I can measure the travel of the opening curtain by itself.

The 1/1000 second shutter speed may also be adjusted at this point. Unlike a more conventional, cloth focal-plane shutter, decreasing the travel time of the shutter will not result in a faster shutter speed. Rather, as travel time is made faster, the shutter speeds delivered will become longer.

The reason for this is that, unlike a conventional shutter, the opening curtain does not release the closing curtain. Instead, the rotation of the *release cam* releases both curtains. As the release cam begins turning, it first contacts the opening curtain release arm, which trips the opening curtain. Then, continuing its rotation, the release cam trips the closing curtain. If the opening and closing curtains are made to travel faster, then the opening curtain will be able to travel farther into the focal plane aperture before the closing curtain is released, and therefore a longer shutter speed will be delivered. To make an adjustment to the top shutter speed, the

release cam drive spring tension must be changed.

Without the mirror cage in place the combination of speed control and shutter blade assembly will not deliver "bulb." This is because the bulb lever on the speed governor must be intercepted by the bulb blocking lever in the mirror cage. Be certain that during reassembly you insert the bulb blocking lever into its cutout in the governor. Reinstallation of the mirror cage should be done with the speed governor removed.

Before the mirror cage is replaced, be sure the *mirror release latch* and the *mirror return lever latch* have been greased. Also, oil the pivots of the mirror cage levers to insure smooth operation. Not greasing the mirror cage release latch will virtually guarantee a rough, jerky releasing camera.

With the governor in place, it's difficult to get all the levers in the proper positions. With the governor removed from the camera, cock the camera body. Also, cock the mirror cage. The mirror cage will then drop into the camera body. Be sure to verify proper operation of the mirror cage and shutter at this point. Although you can not obtain different shutter speeds, you can confirm that the camera's operating sequence is correct.

Next, replace the speed governor assembly. This takes a fair amount of wiggling and a (gentle) firm touch. I've found it easiest to replace the speed governor by first locating the pallet and star wheel end of the speed control over its mounting hole in the body. Next, begin sliding and wiggling the other end of the speed governor into place. Finally, locate the *wind lever lock lever* post in its hole in the governor assembly. You can now adjust the remaining shutter speeds conveniently.

In practice it's very difficult to set the X-sync speed on this shutter to precisely 1/125 second. Like the Copal Square, the X-sync speed on this shutter will be close to 1/100 second. Because there is a separate 1/125 second speed in this camera, it is not necessary that the flash sync speed provide more than proper X-synchronization.

Be careful when adjusting the 1/250 and 1/500 second adjustment. Moving this adjustment too far can jam the camera. If you do this, the remedy is to change the shutter speed to 1/1000 second, loosen the adjusting nut and move the speed's adjustment nut toward the shutter speed dial. There are a number of adjustments for the shutter speeds in the RTL-1000.